



City of Annapolis, MD

Water and Sewer Utility Rate - Final Report

May 9, 2022





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Ms. Thora Burkhardt, PE
Water/Sewer Program Manager
Department of Public Works
City of Annapolis
145 Gorman Street
Annapolis, MD 21401

Re: Water and Sewer Utility
Rate Study – Final Report

Dear Ms. Burkhardt,

Stantec is pleased to present this Final Report of the Water and Sewer Utility Rate Study that we performed for the City of Annapolis. We appreciate the assistance provided by you and all of the members of the City staff who participated in the Study.

If you or others at the City have any questions, please do not hesitate to contact me. We appreciate the opportunity to be of service to the City of Annapolis and look forward to the possibility of doing so again in the near future.

Sincerely,

A handwritten signature in black ink, appearing to read "David Hyder", with a stylized flourish at the end.

David A. Hyder
Senior Principal

1101 14th Street NW
Washington DC 20005
(202) 585-6391
david.hyder@stantec.com

Enclosure

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1. EXECUTIVE SUMMARY

1.1 INTRODUCTION

This Executive Summary presents an overview of the results of the comprehensive Water and Sewer Utility Rate Study (Study) that was conducted for the water and sewer systems of the City of Annapolis (hereafter referred to as the City or Utility) by Stantec Consulting Services Inc. (Stantec).

1.2 STUDY OBJECTIVES

The study was conducted to accomplish a revenue sufficiency analysis to determine the ability of the City's current and future revenues to meet the system funding requirements, and to develop a financial management plan to ensure the ongoing financial health of the City's water and sewer utility systems.

To facilitate the revenue sufficiency analysis, Stantec updated and populated the City's financial forecasting model that simulates the financial operations of the water and sewer systems. The model was used to determine the level of annual revenue required to satisfy projected annual operating and maintenance expenses, debt service payments, debt service coverage, and capital cost requirements, as well as maintain adequate reserves.

1.3 REVENUE SUFFICIENCY ANALYSIS

The revenue sufficiency analysis (RSA) evaluated the sufficiency of the City's current water and sewer revenues to meet all of its current and projected financial requirements over a ten-year projection period and determined the level of any rate revenue increases necessary in each year of the projection period to provide sufficient revenues to fund all of the City's cost requirements.

Based on the RSA, it was determined that the City's current water rates will not be sufficient to meet the funding requirements of the water system over the next several years. Sewer rates were determined to be sufficient in the near-term but will require adjustments in future years to meet the needs of the sewer system. Based on the needed revenue requirements, including ongoing capital reinvestment in the systems, the current revenues will be insufficient, and, without adjustment, the City will exhaust all monies within the Water and Sewer Fund and will not be able to meet debt service coverage requirements in coming years.

To address the needs of the system, Stantec has developed a financial management plan that will gradually increase water and sewer revenues. The recommended financial management plan and corresponding plan of water and sewer rate revenue adjustments are based upon the revenue and expense information, beginning cash balances, and assumptions as described in Section 4 of this report. The RSA examined the historical trends in system expenditures and revenues, including an analysis of the usage by customer class, to examine the impacts of changing usage patterns on system revenues.

The recommended water rate revenue adjustment for Fiscal Year (FY) 2023 is presented in Table 1-1, along with a forecast of future rate adjustments for both water and sewer.

Table 1-1 Recommended Plan of Water and Sewer Rate Revenue Increases

	FY 23	FY 24	FY 25	FY 26	FY 27
<i>Effective Date</i>	<i>7/1/2022</i>	<i>7/1/2023</i>	<i>7/1/2024</i>	<i>7/1/2025</i>	<i>7/1/2026</i>
Water Rate Increase	4.00%	4.90%	4.90%	4.90%	4.90%
Sewer Rate Increase	0.00%	3.50%	3.50%	3.50%	3.50%

The rate revenue adjustments identified in Table 1-1 for FY 24 – 27 are estimates at this time based on projected needs of the system. The City has adopted a policy of completing annual water and sewer rate reviews. These reviews will allow the City to refine and adjust the level of rate adjustment, given the actual funding requirements of the system each year. The proposed water rates for FY 23 and the current sewer rates are presented in Tables 1-2 and 1-3.

Table 1-2 Proposed FY 2023 Water and Current Sewer Fixed Charges

Meter Size	Water Fixed Charge	Sewer Fixed Charge*
1" or Less	\$13.15	\$13.44
1 ½"	\$65.72	\$67.19
2"	\$105.17	\$107.50
3"	\$210.34	\$215.00
4"	\$328.64	\$335.94
6"	\$657.27	\$671.94

**Reflects current sewer fixed charges*

Table 1-3 Proposed FY 2023 Water and Current Sewer Usage Charges

Type	Usage Charge (per 1,000 gallons)
Residential Water	
Tier 1: 0 - 7,000 gallons	\$4.15
Tier 2: 7,001 - 20,000 gallons	\$8.31
Tier 3: Over 20,000 gallons	\$12.45
Non-Residential Water	\$6.18
Sewer Usage Rates*	\$5.91
Naval Academy Usage Rates*	\$5.25

**Reflects current sewer usage rates*

1.4 FINANCIAL METRICS

The City has established financial policies that designate the maintenance of cash reserves. The cash reserves help the City maintain a healthy cash balance to address unexpected drops in revenues due to weather or emergency capital improvement needs and ensure adequate liquidity within the Utility. It is recommended that the City continue to maintain an operating reserves at a minimum of 6 months (180 days) of operating expenses.

Fund balances resulting from the recommended financial plan are illustrated in Table 1-4.

Table 1-4 Fund Reserve Balances (\$ millions)

	FY 23	FY 24	FY 25	FY 26	FY 27
Total Unrestricted Cash	\$20.01	\$18.21	\$16.70	\$15.06	\$13.29
Unrestricted Days Cash on Hand	637	578	514	448	382

As shown in Table 1-4, the recommended plan will result in the use of unrestricted cash balances over the projection period. In this manner the plan keeps rate adjustments at a minimal level but targets a minimum unrestricted cash balance.

In addition to maintaining reserve funds, the annual revenues of the water and sewer system must be sufficient to meet the City's debt service coverage requirements. The City's bond resolution states revenue available for debt service must stay above 125% of total debt service for the combined water and sewer utility for senior lien debt (revenue bonds). The City has adopted a financial policy that is more conservative than the bond resolution, setting the minimum debt service coverage ratio at 150%. The debt service coverage over the projection period based on the financial plan reflects the 150% debt coverage ratio and is presented in Table 1-5 for existing senior lien debt service.

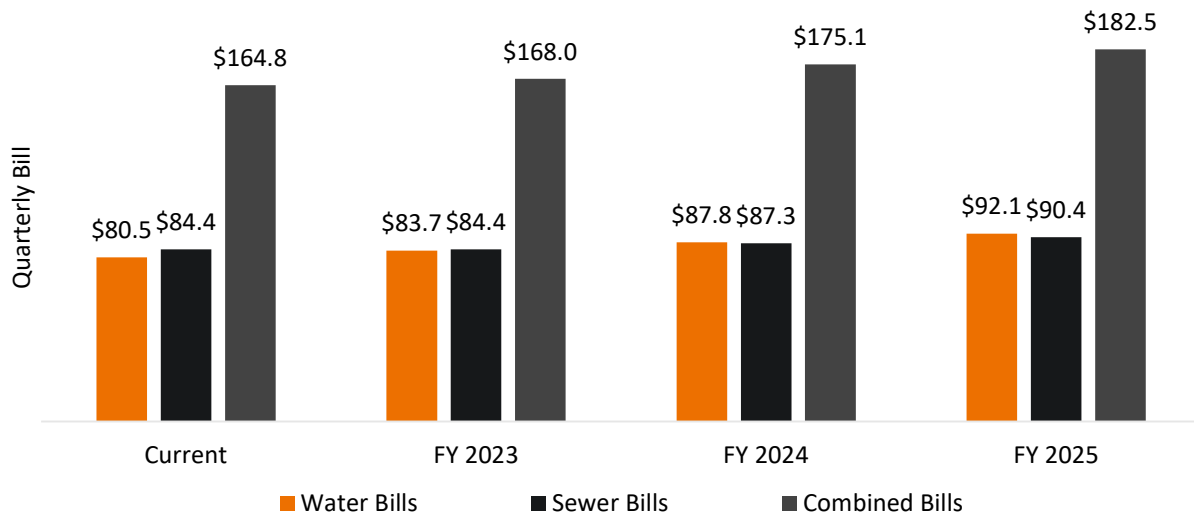
Table 1-5 Senior Lien Debt Service Coverage (\$ millions)

	FY 23	FY 24	FY 25	FY 26	FY 27
Total Revenues Available for Coverage	\$16.26	\$16.84	\$17.44	\$18.06	\$18.71
Less Operating Expenses	(\$11.47)	(\$11.50)	(\$11.87)	(\$12.27)	(\$12.70)
Net Income Available for Debt Service	\$4.79	\$5.33	\$5.57	\$5.78	\$6.01
Existing Senior Lien Debt Service ⁽¹⁾	\$2.83	\$2.81	\$2.80	\$2.77	\$2.77
Debt Service Coverage Ratio	1.70	1.90	1.99	2.08	2.17

⁽¹⁾ Includes existing senior debt which is subject to 1.50 debt service coverage policy.

While reserve fund balances and coverage ratios serve as key metrics for the Utility, customer bill impacts are also a key factor in policy decisions and must be considered within the recommended financial plans for the City. The typical quarterly water and sewer bills for the City's retail residential customers based on the proposed financial plan are represented in Figure 1-1.

**Figure 1-1 Quarterly Water and Sewer Bill for Typical Residential Customer
(12,000 gallons per quarter)**



As demonstrated in the figure above, the quarterly increases in the typical customers bill are amount to an approximate increase of \$3 per quarter or \$1.0 per month in FY 23.

2. INTRODUCTION

Stantec Consulting Services Inc. (Stantec) has conducted a comprehensive Water and Sewer Utility Rate (Study) for the water and sewer systems of the City of Annapolis (hereafter referred to as the City or Utility). This report presents the background, approach, methodologies, source data, assumptions, as well as the results and recommendations of the Study.

2.1 BACKGROUND

The City of Annapolis provides water and sewer service to residents and businesses located within the City, and a few areas outside the City. Service is currently provided to approximately 12,000 customers located inside the City and just over 800 outside the City. The water and sewer systems are managed by the City's Department of Public Works.

The City owns and operates a water system consisting of the recently constructed water treatment plant, with a maximum capacity of 8.0 MGD, approximately 140 miles of water lines ranging in size from 2 inches to 20 inches, and 5 distribution system storage tanks.

The City's sewer system consists of approximately 125 miles of gravity-fed collection mains, 25 pumping stations, and the Annapolis Water Reclamation Facility (AWRF). The AWRF is jointly owned by the City and Anne Arundel County. The City is allocated 6.7 MGD of permitted average daily capacity within the plant. In addition to providing sewer service to residential and commercial customers, the City provides sewer collection service to the U.S. Naval Academy.

The Annapolis City Council has adopted a policy that requires the City to engage an external consultant to annually review the financial performance of the water and sewer systems including the development of long-term financial plans. This policy augments and assists with validating the detailed financial forecasting completed internally by City staff.

2.2 STUDY OBJECTIVES

The scope of service identified for the Study includes the following tasks:

Perform a Revenue Sufficiency Analysis Update – Populate and update a multi-year forecasting model for the City's water and sewer system that will determine the level of annual revenue required to satisfy projected annual operating, debt service, and capital cost requirements, as well as maintain adequate reserves.

Review Customer Usage Profile – Conduct a detailed review of the customer counts and annual consumption for the City's water and sewer customer base. The detailed review examines usage trends and patterns within the current water usage rate structure.

Recommend a Financial Plan – Based on the revenue sufficiency analysis, recommend a financial plan for the water and sewer systems including any necessary rate adjustments for FY 23 and future years to ensure the financial sustainability and viability of the Utility.

Demonstrate Customer Impacts – Demonstrate the impact of the recommended financial plan on the customers of the water and sewer systems.

Benchmarking Utility Bills – Complete a comparison of the City's current typical customer bill with bills for surrounding and comparable utilities.

3. DEMAND AND CUSTOMER ANALYSIS

3.1 CUSTOMER ANALYSIS

To complete the water and sewer rate study update, the City provided detailed customer and usage data from the City's utility billing system. The data was provided for FY 21 by customer for each quarterly billing period. The customer count for each customer type and meter size is presented in Table 3-1.

Table 3-1 Water System Customer Counts

Meter Size	Residential	Multi-Family	Non-Residential	Total
5/8"	8,711	251	695	9,657
3/4"	68	8	18	94
1"	1,980	77	244	2,301
1 1/2"	27	151	144	322
2"	1	161	225	387
3"	0	28	56	84
4"	0	16	66	82
6"	0	5	5	10
Total	10,787	697	1,453	12,937

The sewer system customer account data is provided for the same time period in Table 3-2.

Table 3-2 Sewer System Customer Counts

Meter Size	Residential	Multi-Family	Non-Residential	Total
5/8"	8,003	248	547	8,798
3/4"	67	8	17	92
1"	2,007	76	191	2,274
1 1/2"	24	151	113	288
2"	1	160	187	348
3"	0	26	53	79
4"	0	15	55	70
6"	0	5	3	8
Total	10,102	689	1,166	11,957

The City has a very stable customer base with little fluctuation in the number of customers billed on an annual basis. For purposes of the rate study, the current number of customers is assumed to remain the same during the projection period.

3.2 DEMAND ANALYSIS

The usage data provided by the City for FY 21 was analyzed as part of the study. In FY 20 usage for Non-Residential customers and the Naval Academy decreased due to impacts caused by the COVID-19 pandemic. The analysis of FY 21 usage data showed that customers have resumed using water at levels comparable to the period before the pandemic (FY 19). The total water billable usage in FY 21 was above the billed usage in FY 20 quantities by approximately 3%, and 1% above billed usage quantities in FY 19. Similarly, FY 21 total sewer billable usage was 5% higher in FY 21 as compared to FY 20, but approximately 1% lower than 2019. The FY 21 total sewer billable usage is not back to pre-pandemic levels, most notably due to the lower usage of the Naval Academy. During a portion of FY 20 the Academy was closed due to the pandemic and therefore produced significantly lower quantities of sewerage. Usage has not fully rebounded. Table 3-3 and 3-4 presents the FY 19 to FY 21 billed usage for the water and sewer systems.

Table 3-3 Water Usage (1,000 gallons)

Customer Class	FY 19	FY 20	FY 21	Volume Change	% Change FY 20 - 21
Single-Family Residential	487,847	501,124	499,213	(1,911)	(0.4%)
Multi-Family	238,928	230,335	239,330	8,995	3.9%
Non-Residential	379,042	350,105	378,802	28,697	8.2%
Total	1,105,817	1,081,564	1,117,345	35,781	3.3%

Table 3-4 Sewer Usage (1,000 gallons)

Customer Class	FY 19	FY 20	FY 21	Volume Change	% Change FY 20 - 21
Single-Family Residential	468,398	479,230	479,804	574	0.1%
Multi-Family	231,749	223,465	233,434	9,969	4.5%
Non-Residential	327,037	301,642	345,374	43,732	14.5%
US Naval Academy	201,874	147,089	158,640	11,551	0.8%
Total	1,229,058	1,151,426	1,217,252	65,826	5.7%

While it is difficult to forecast the continued impacts the pandemic may have on the usage patterns for Non-Residential customers and the Naval Academy, it is likely that the City will continue to experience ongoing annual reductions in per customer usage consistent with historical trends. For purposes of the demand forecast within the financial modeling, we have assumed annual reductions of approximately 0.5% per account per year. This conservative assumption is consistent with the long-term trends experienced within the City.

The final component of the usage analysis was to examine how the City's residential water customers are using water within the inclining block rate structure. The usage patterns are shown in Table 3-5.

Table 3-5 FY 21 Residential Water Usage Patterns

Water Rate Tiers	Water Volume	Water Rate Tiers
Tier 1: 0 - 7,000 gallons	252,921	51%
Tier 2: 7,001 - 20,000 gallons	188,662	38%
Tier 3: Over 20,000 gallons	57,630	12%
Total	499,213	100%

While the overall usage has fluctuated year to year in the City, the usage patterns within the current water tiers have stayed fairly consistent. For a point of reference, the usage distribution in FY13 was approximately 50%, 40% and 10% among the three tiers. The usage patterns shown in Table 3-4 are fairly consistent with results over the last several years. The usage breakdown shown in Table 3-4 very similar to the usage distribution observed in FY 19.

In conclusion, the results of the detailed usage analysis for FY 21 reveal relative stability in the usage patterns among the City's customer base over the last several years. However, it is important to note that the City should continue to monitor usage patterns.

4. REVENUE SUFFICIENCY ANALYSIS

4.1 DESCRIPTION

This section presents the methodology and results of the revenue sufficiency analysis (RSA) performed for the City's water and sewer systems. The RSA examines the ability of the water and sewer systems to fund the revenue requirements of the Utility with current water and sewer rates, and identifies any necessary adjustments required to ensure revenue sufficiency. The following subsections present a description of the source data, assumptions, and results of the RSA.

In order to populate the financial model, Stantec reviewed the City's historical and budgeted financial information regarding the operation of its water and sewer systems. Stantec also reviewed the City's multi-year capital improvement programs (CIP), and documented the City's current debt service obligations and covenants, or promises made to lenders, relative to net income coverage requirements, reserves, etc. Stantec also counseled with City staff regarding other assumptions and policies that would affect the financial performance of the Utility, such as changes in system processes or other factors that might impact system expenditures and/or revenues. Finally, as outlined in Section 3, Stantec completed a detailed review of historical usage by customer class to assist in the development of demand projections.

All of the City's updated information was entered into the City's existing water and sewer financial model and the model was reviewed for accuracy. The projection period within the model was also extended to provide a full ten-year projection period (FY 23 to FY 32).

Once the financial model was reviewed and updated, Stantec reviewed alternative multi-year financial management plans and corresponding water and sewer rate revenue adjustment plans through an interactive work session with City staff. The work session focused on the capital improvement plan, including discussion surrounding funding sources and spending levels. Each of the potential scenarios were evaluated in light of key financial metrics for the Utility including cash reserves, debt service coverage requirements, and customer bill impacts. After discussions and scenario analysis, Stantec developed the recommended financial management plan and corresponding plan of annual water and sewer rate revenue adjustments presented in this report. The financial plan was developed for the full 10-year projection period with recognition that the City will evaluate the plan annually and make adjustments as necessary given changing conditions within the Utility.

4.2 SOURCE DATA AND ASSUMPTIONS

The following subsections present the key source data and assumptions relied upon in conducting the RSA.

4.2.1 Fund Balances & Reserves

The FY 21 Annual Comprehensive Financial Report (ACFR) and supporting trial balance files provided by City staff were used to establish the beginning FY 22 balances for City's water and sewer system. As of the

end of FY 21, the City had approximately \$21.2 million of unrestricted cash and cash equivalents. The total unrestricted reserves for water system equal \$12.4 million and the reserves for sewer system total \$8.8 million.

4.2.2 Revenues

The revenues utilized in the RSA reflect an evaluation of multiple years of historical results. Revenues consist of rate revenue, interest income, and other minor revenue from miscellaneous service charges. FY 22 rate revenue is based the FY 22 adjusted budget provided by the City and shows \$7.9M in water rate revenue and \$7.7M in sewer rate revenue.

To evaluate the sufficiency of current revenue levels to meet the funding requirements of the water and sewer systems, the revenues are forecasted at current rates with no growth in customers and no changes to customer demand or billable usage. Projected revenues at current rates and miscellaneous revenues are shown below in Table 4-1 for the water system and Table 4-2 for the sewer system.

Table 4-1 Projected Water Revenues at Current Rates (\$ millions)

	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	FY 29	FY 30	FY 31	FY 32
Charges for Services - Water	\$7.92	\$7.92	\$7.92	\$7.92	\$7.92	\$7.92	\$7.92	\$7.92	\$7.92	\$7.92
Other Miscellaneous Revenue	\$0.54	\$0.54	\$0.54	\$0.54	\$0.54	\$0.54	\$0.54	\$0.54	\$0.54	\$0.54
Total Water Gross Revenues	\$8.47	\$8.47	\$8.47	\$8.47	\$8.47	\$8.47	\$8.47	\$8.47	\$8.47	\$8.47

Table 4-2 Projected Sewer Revenues at Current Rates (\$ millions)

	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	FY 29	FY 30	FY 31	FY 32
Charges for Services - Sewer	\$7.74	\$7.74	\$7.74	\$7.74	\$7.74	\$7.74	\$7.74	\$7.74	\$7.74	\$7.74
Other Miscellaneous Revenue	\$0.44	\$0.44	\$0.44	\$0.44	\$0.44	\$0.44	\$0.44	\$0.44	\$0.44	\$0.44
Total Sewer Gross Revenues	\$8.18	\$8.18	\$8.18	\$8.18	\$8.18	\$8.18	\$8.18	\$8.18	\$8.18	\$8.18

4.2.3 Operating Expenditures

The Utility's operating expenditures include all operating and maintenance expenses, transfers, debt service requirements, and minor capital outlay. The RSA based operating expenditure projections on the individual expense categories and expense amounts within the FY 22 Adjusted Budget and the FY 23 Proposed Budget, adjusted annually thereafter based upon assumed cost escalation factors that were reviewed with City staff (with the exception of annual debt service expenses which reflect the repayment

schedules of each outstanding bond/loan). Based on a historical review of the City's budget-to-actual spending, no execution adjustment was made within the forecast as the Utility has historically executed the full budget. It should be noted that the sewer budget for FY 22 and FY 23 reflects a reduction in wastewater expenses at the wastewater treatment plant due to nutrient credits. This reduction of \$0.6 million is anticipated to continue until FY 25 when the credits will be removed.

4.2.4 Existing Debt Service

The City currently has several outstanding debt service issuances within the water and sewer fund. Specifically, the water and sewer funds debt issuances include 2019 General Obligation public improvement bonds, and 2015 revenue bonds. The water fund includes a 2013 loan from the Maryland Department of Environment (MDE) that was used to fund the construction of the new water treatment plant. In addition to the existing debt service, the City provided a debt service schedule associated with the construction of a new Public Works maintenance facility. The debt service for this facility is allocated between water, sewer, stormwater and refuse with payments beginning in FY 23. The detailed annual debt service amortization schedules for all existing obligations were provided by City staff and included in the RSA.

4.2.5 Capital Improvement Program

City staff provided the multi-year Capital Improvement Program (CIP) in project level detail. Once the capital plan was updated in the model, the annual funding sources for the capital projects were discussed in detail with City staff during the work session. Recent capital projects have been funded by a combination of debt and current revenues. While the City will continue to utilize bond funding in future years, many of the projects that the City has identified in its capital improvement program are recurring replacement-type projects. It is common to fund at least a portion of these types of projects with current revenues (known as Pay-As-You-Go). This approach reduces the annual interest expenses borne by the City and recognizes that existing users of the system are benefiting from the improvements to the system.

Based on the available cash within the Water and Sewer Fund and the minimum reserve requirements, Stantec recommends that the City continue to use current revenues to fund a portion of the CIP. Specifically, the financial plan assumes that the City will use cash to fund approximately 30% of the annual capital projects over the projection period. This level will allow the Utility to maintain its minimum reserve balances, while limiting impacts to water and sewer customers. The City's ten-year CIP projection includes approximately \$50.05 million of water-related capital projects and \$24.75 million of sewer-related capital projects.

4.2.6 Minimum Reserve Policy

Reserve balances for utility systems are funds set aside for a specific cash flow requirement, financial need, project, task, or legal covenant. These balances are maintained in order to meet short-term cash flow requirements, and at the same time, minimize the risk associated with meeting the financial obligations and continued operational and capital needs under adverse conditions. The level of reserves maintained by a

utility is an important component and consideration of developing a utility system multi-year financial management plan.

Many utilities, rating agencies, and the investment community as a whole place a significant emphasis on having sufficient reserves available for potentially adverse conditions. The rationale related to the maintenance of adequate reserves is twofold. First, it helps to assure a utility that it will have adequate funds available to meet its financial obligations during unusual periods (e.g., when revenues are unusually low and/or expenditures are unusually high). Second, it provides funds that can be used for emergency repairs or replacements to the system that can occur because of unanticipated system failures.

The City has identified fund reserves and restricts the use of specific fund balances each year. Operating reserves are set to equal 180 days of annual operating and maintenance (O&M) expenses. The total combined unrestricted cash balances are shown for the entire planning period in Table 4-5. The table demonstrates that the water and sewer system would exhaust all reserve balances by FY 27, based on the projected system revenue requirements and anticipated revenues at current rates (e.g., assuming the City does not adjust water and sewer rates in future years).

4.3 RESULTS

Based on the RSA, it was determined that the City's current water and sewer rates will not be sufficient to meet the funding requirements of the water and sewer systems over the next several years. A summary of the water system operating and capital expenses (also known as system revenue requirements) are illustrated in Table 4-3, along with the anticipated water revenues at the current water rates, current customers and current usage levels.

Table 4-3 Projected Water Operating and Capital Expenses (\$ millions)

	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	FY 29	FY 30	FY 31	FY 32
Total Operating Expenses	\$5.15	\$4.99	\$5.14	\$5.28	\$5.44	\$5.60	\$5.76	\$5.93	\$6.10	\$6.28
Capital Expenses										
Cash Funded Capital	\$1.47	\$1.82	\$1.47	\$1.47	\$1.47	\$1.47	\$1.47	\$1.47	\$1.47	\$1.47
Existing Debt Service	\$3.28	\$3.27	\$3.26	\$3.24	\$3.24	\$3.23	\$3.23	\$3.19	\$3.18	\$3.26
Projected Debt Service	\$0.00	\$0.22	\$0.48	\$0.70	\$0.91	\$1.13	\$1.35	\$1.56	\$1.56	\$1.56
Total Capital Expenses	\$4.75	\$5.31	\$5.21	\$5.41	\$5.63	\$5.83	\$6.05	\$6.22	\$6.21	\$6.30
Total Water Expenses	\$9.90	\$10.30	\$10.35	\$10.69	\$11.07	\$11.43	\$11.81	\$12.15	\$12.31	\$12.58
Current Water Revenues	\$8.47	\$8.47	\$8.47	\$8.47	\$8.47	\$8.47	\$8.47	\$8.47	\$8.47	\$8.47

A summary of the sewer system operating and capital expenses are illustrated in Table 4-4 along with the anticipated sewer revenues at the current sewer rates and usage levels.

Table 4-4 Projected Sewer Operating and Capital Expenses (\$ millions)

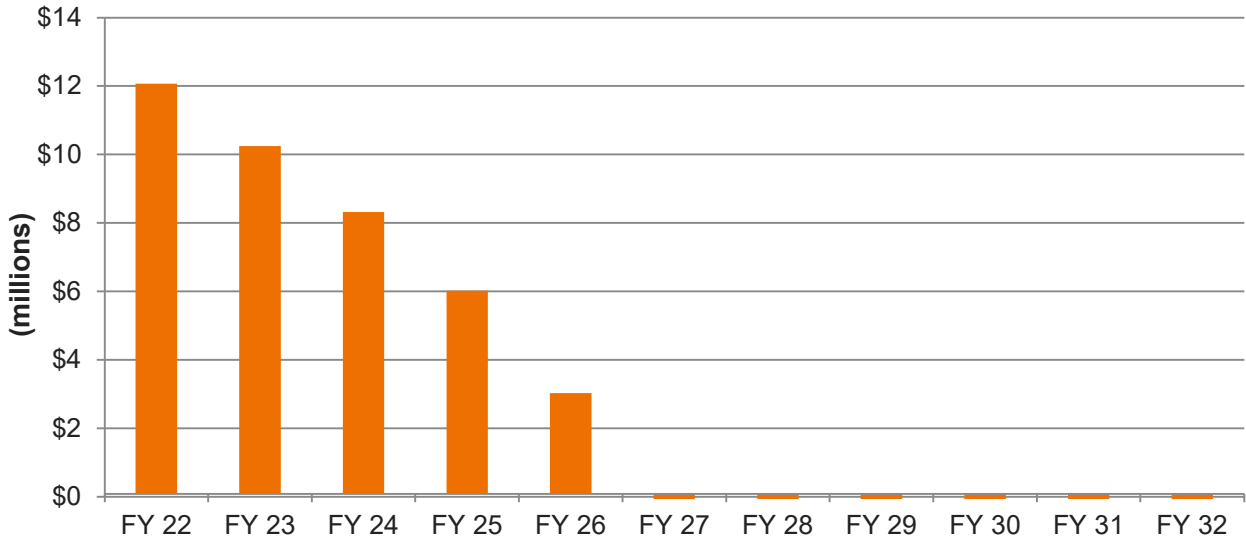
	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	FY 29	FY 30	FY 31	FY 32
Total Operating Expenses	\$6.31	\$6.51	\$6.73	\$6.99	\$7.26	\$7.54	\$7.83	\$8.12	\$8.43	\$8.76
Capital Expenses										
Cash Funded Capital	\$1.35	\$0.68	\$0.68	\$0.68	\$0.68	\$0.68	\$0.68	\$0.68	\$0.68	\$0.68
Existing Debt Service	\$0.90	\$0.89	\$0.88	\$0.88	\$0.87	\$0.81	\$0.81	\$0.84	\$0.83	\$0.77
Projected Debt Service	\$0.00	\$0.20	\$0.30	\$0.40	\$0.50	\$0.60	\$0.70	\$0.80	\$0.80	\$0.80
Total Capital Expenses	\$2.25	\$1.77	\$1.86	\$1.96	\$2.04	\$2.08	\$2.18	\$2.31	\$2.30	\$2.24
Total Sewer Expenses	\$8.56	\$8.28	\$8.59	\$8.95	\$9.30	\$9.62	\$10.01	\$10.44	\$10.74	\$11.00
Current Sewer Revenues	\$8.18	\$8.18	\$8.18	\$8.18	\$8.18	\$8.18	\$8.18	\$8.18	\$8.18	\$8.18

As demonstrated in Tables 4-3 and 4-4, the revenues from current water and sewer rates will not be sufficient to meet the total expenses of the water and sewer systems in each year of the projection beginning in FY 23. The water and sewer system unrestricted cash balance will be depleted over the next several years if water and sewer rates are not adjusted as shown in Table 4-5.

Table 4-5 Water and Sewer System End of Year Unrestricted Cash Balances (\$ millions)

	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	FY 29	FY 30	FY 31	FY 32
Water System	\$2.67	\$0.84	(\$1.04)	(\$3.27)	(\$5.87)	(\$8.83)	(\$12.17)	(\$15.86)	(\$19.71)	(\$23.82)
Sewer System	\$7.50	\$7.39	\$6.98	\$6.21	\$5.09	\$3.65	\$1.82	(\$0.44)	(\$3.00)	(5.83)
Total Combined Cash Balance	\$10.16	\$8.23	\$5.94	\$2.94	(\$0.78)	(\$5.18)	(\$10.35)	(\$16.30)	(\$22.71)	(\$29.65)

The projected combined cash balance for the Water and Sewer Fund based on current water and sewer rates is presented in Figure 4-1.

Figure 4-1 Total End of Year Unrestricted Water and Sewer Cash Balance

As demonstrated in Table 4-5 and Figure 4-1, if no adjustments are made to current rates, the City will not be able to maintain the necessary cash balances to operate the systems and would exhaust all unrestricted cash reserves by FY 27.

In addition to maintaining sufficient fund balance, the annual revenues of the water and sewer system must be sufficient to meet the City debt service coverage requirements. The City's bond resolution requires that the revenue available for debt service must stay above 125% of senior lien debt service for the water and sewer utility combined. The City has taken an even more fiscally conservative approach above the resolution and strives to achieve a debt service coverage ratio of 150%. The debt service coverage for the City's existing senior lien debt over the projection period based on current rates is presented in Table 4-6. It should be noted that the forecast assumes any future debt will be subordinate debt. This assumption is based on discussions with City Staff.

Table 4-6 Senior Lien Debt Service Coverage

	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	FY 29	FY 30	FY 31	FY 32
Total Revenues Available for Coverage	\$16.64	\$16.64	\$16.64	\$16.64	\$16.64	\$16.64	\$16.64	\$16.64	\$16.64	\$16.64
Less Operating Expenses	(\$11.47)	(\$11.50)	(\$11.87)	(\$12.27)	(\$12.70)	(\$13.13)	(\$13.59)	(\$14.05)	(\$14.54)	(\$15.04)
Net Income Available for Debt Service	\$5.17	\$5.14	\$4.78	\$4.37	\$3.95	\$3.51	\$3.06	\$2.59	\$2.11	\$1.61
Existing Senior Lien Debt Service ⁽¹⁾	\$2.83	\$2.81	\$2.80	\$2.77	\$2.77	\$2.76	\$2.76	\$2.77	\$2.76	\$2.79
Debt Service Coverage Ratio (Min 1.5)	1.83	1.83	1.71	1.57	1.43	1.27	1.11	0.94	0.76	0.58

⁽¹⁾ Includes only senior lien debt which is subject to 1.50 debt service coverage requirement.

As demonstrated in the Table 4-6, the Water and Sewer Fund revenue will not meet the debt service coverage ratio and would violate the bond covenant by FY 27. The annual debt service coverage for the Water and Sewer Fund total debt service is shown in Table 4-7. The table shows similar results with coverage falling below 1.0 in FY 24.

Table 4-7 Total System Debt Service Coverage

	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	FY 29	FY 30	FY 31	FY 32
Total Revenues Available for Coverage	\$16.64	\$16.64	\$16.64	\$16.64	\$16.64	\$16.64	\$16.64	\$16.64	\$16.64	\$16.64
Less Operating Expenses	(\$11.47)	(\$11.50)	(\$11.87)	(\$12.27)	(\$12.70)	(\$13.13)	(\$13.59)	(\$14.05)	(\$14.54)	(\$15.4)
Net Income Available for Debt Service	\$5.17	\$5.14	\$4.78	\$4.37	\$3.95	\$3.51	\$3.06	\$2.59	\$2.11	\$1.61
Total Annual Debt Service	\$4.17	\$4.58	\$4.93	\$5.22	\$5.52	\$5.77	\$6.08	\$6.39	\$6.37	\$6.40
Debt Service Coverage Ratio (Min 1.0)	1.24	1.12	0.97	0.84	0.71	0.61	0.50	0.41	0.33	0.25

5. RECOMMENDATIONS

This section of the report presents the recommendations developed as part of the Study.

5.1 REVENUE SUFFICIENCY ANALYSIS

As demonstrated in the revenue sufficiency analysis results section, the City's current water and sewer rates are not sufficient to meet the funding requirements of each system over the projection period. Without adjustments to rates, the City will exhaust all reserves within the Water and Sewer Fund and violate its bond covenant. While it appears that these negative outcomes would not occur for a few years, should the City hesitate and wait to address them, significant (double digit) rate adjustments will be required, which will most certainly result in rate shock within the community. We recommend that the City gradually increase water and sewer rates over the next several years to ensure revenue sufficiency within the Water and Sewer Fund. This approach will minimize the impacts on customer bills, while allowing the system to meet its financial requirements of the system.

The recommended plan of water and sewer rate revenue increases is presented in Table 5-1. As noted in the table, no rate adjustment is proposed for sewer rates in FY 23. Given the ongoing reduction in operating costs within the sewer system associated with the nutrient credits no adjustment is necessary for FY 23.

Table 5-1 Recommended Plan of Water and Sewer Rate Revenue Increases

	FY 23	FY 24	FY 25	FY 26	FY 27
<i>Effective Date</i>	<i>7/1/2022</i>	<i>7/1/2023</i>	<i>7/1/2024</i>	<i>7/1/2025</i>	<i>7/1/2026</i>
Water Rate Increase	4.00%	4.90%	4.90%	4.90%	4.90%
Sewer Rate Increase	0.00%	3.50%	3.50%	3.50%	3.50%

It should be noted that the rate revenue adjustments identified in Table 5-1 for FY 23 - FY 27 are estimates at this time based on projected needs of the system. Stantec recommends that the City continue to evaluate the needs of the system on an annual basis consistent with its current policy. Tables 5-2 and 5-3 present the proposed water rates for FY 23 along with the current sewer rates.

Table 5-2 Proposed FY 2023 Water and Sewer Fixed Charges

Meter Size	Water Fixed Charge	Sewer Fixed Charge*
1" or Less	\$12.65	\$13.44
1 ½"	\$65.72	\$67.19
2"	\$105.17	\$107.50
3"	\$210.34	\$215.00
4"	\$328.64	\$335.94
6"	\$657.29	\$671.94

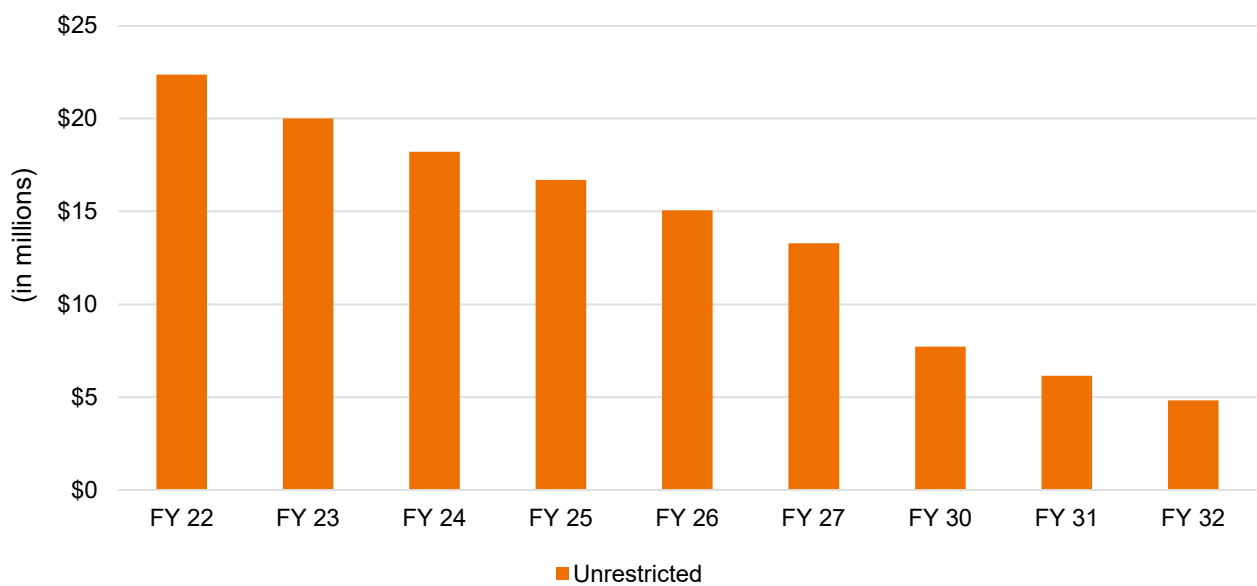
*Reflects current sewer fixed charges

Table 5-3 Proposed FY 2023 Water and Sewer Usage Charges

Type	Usage Charge (per 1,000 gallons)
Residential Water	
Tier 1: 0 - 7,000 gallons	\$4.15
Tier 2: 7,001 - 20,000 gallons	\$8.31
Tier 3: Over 20,000 gallons	\$12.45
Non-Residential Water	\$6.18
Sewer Usage Rates*	\$5.91
Naval Academy Usage Rates*	\$5.25

*Reflects current sewer usage rates

In addition to the recommended rate adjustments, Stantec recommends that the City continue cash funding a portion (approximately 30%) of the annual capital plan. The use of cash funding will utilize some of the existing cash in the Water and Sewer Fund and will significantly reduce interest expenses over the projection period. Figure 5-1 presents the estimated annual cash balances within the Water and Sewer Fund based on the recommended financial management plan. The figure shows consistent spending down of unrestricted cash. Should the forecast of revenues and expenditures match the results of this study, modest additional increases will be required in future years above the increases presented in this Report to ensure that the City maintains adequate cash balances.

Figure 5-1 End of Year Water and Sewer Cash Balances by Reserve Type

The financial management plan will also ensure that the City continues to meet its debt service coverage requirements over the next several years. Table 5-4 presents the annual coverage on existing senior lien debt over the projection period.

Table 5-4 Senior Lien Debt Service Coverage

	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	FY 29	FY 30	FY 31	FY32
Total Revenues Available for Coverage	\$16.26	\$16.84	\$17.44	\$18.06	\$18.71	\$19.38	\$20.08	\$20.80	\$21.56	\$22.34
Less Operating Expenses	(\$11.47)	(\$11.50)	(\$11.87)	(\$12.27)	(\$12.70)	(\$13.13)	(\$13.59)	(\$14.05)	(\$14.54)	(\$15.04)
Net Income Available for Debt Service	\$4.79	\$5.33	\$5.57	\$5.78	\$6.00	\$6.24	\$6.49	\$6.75	\$7.02	\$7.31
Existing Annual Senior Lien Debt Service ⁽¹⁾	\$2.83	\$2.81	\$2.80	\$2.77	\$2.77	\$2.76	\$2.76	\$2.77	\$2.76	\$2.79
Debt Service Coverage Ratio (Min 1.5)	1.70	1.90	1.99	2.08	2.17	2.26	2.35	2.44	2.54	2.62

⁽¹⁾ Includes only senior lien debt which is subject to 1.50 debt service coverage requirement.

6. CUSTOMER IMPACTS & COMPARISONS

The recommendations developed as part of the revenue sufficiency analysis will have an impact on the water bills for customers served with water service by the City. The following figures demonstrate the impacts to a typical residential and non-residential customer within the City over the next three years.

Figure 6-1 Quarterly Water & Sewer Bill for Typical Residential Customer (12,000 gallons)

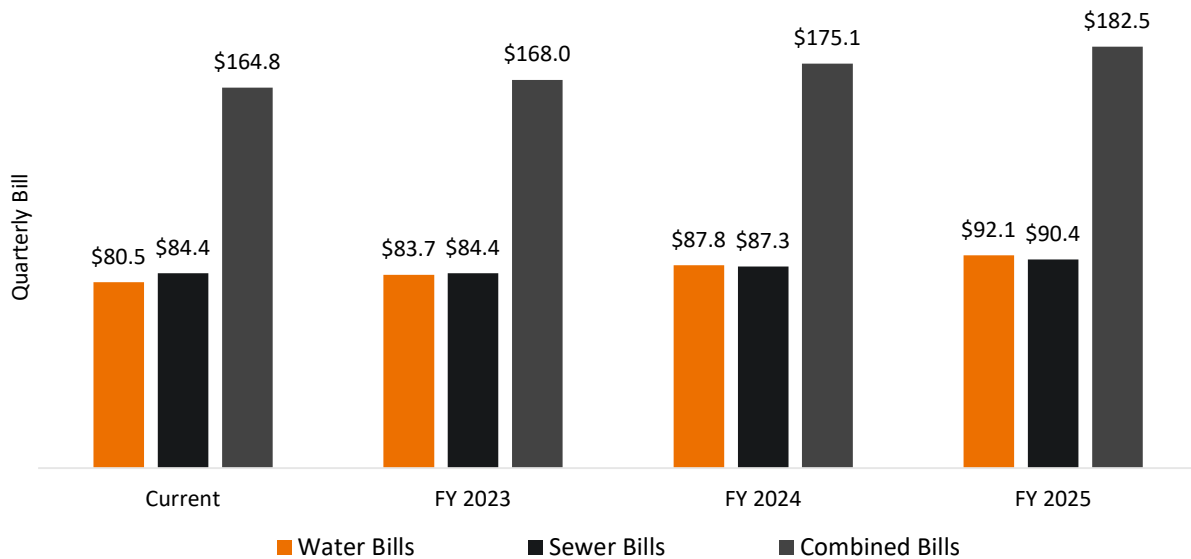
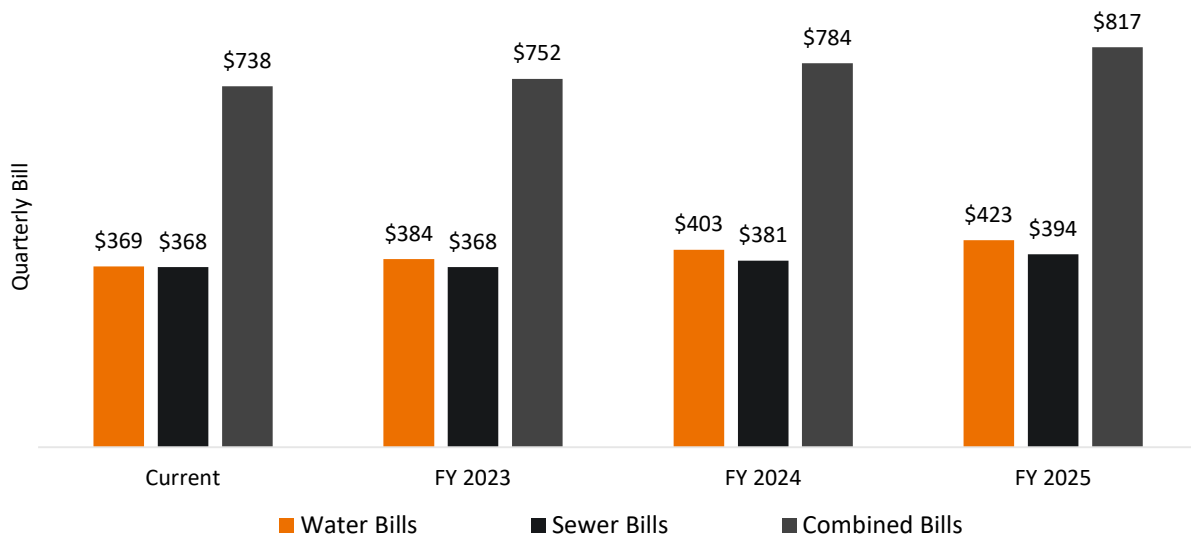


Figure 6-2 Quarterly Water & Sewer Bill for Typical Non-Residential Customer (60,000 gallons)



The comparison of current and proposed water and sewer rates with those assessed by surrounding jurisdictions can provide perspective on the level of bills paid by customers located within the City. The following figures were developed to provide a comparison of what a typical residential customer pays for water and sewer service in surrounding jurisdictions. It is important to note that the comparison community bills reflect current rates and do not reflect potential rate adjustments in FY 23, for which data is not yet available.

Figure 6-3 Quarterly Water Bill Comparison (1" Meter, 12,000 gallons per quarter)

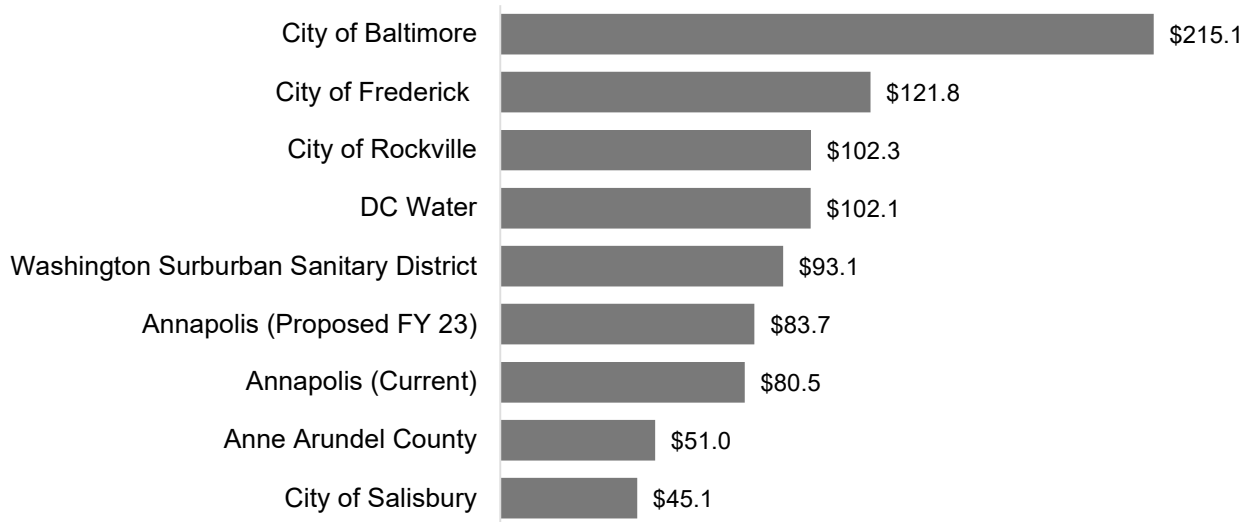


Figure 6-4 Quarterly Sewer Bill Comparison (1" Meter, 12,000 gallons per quarter)

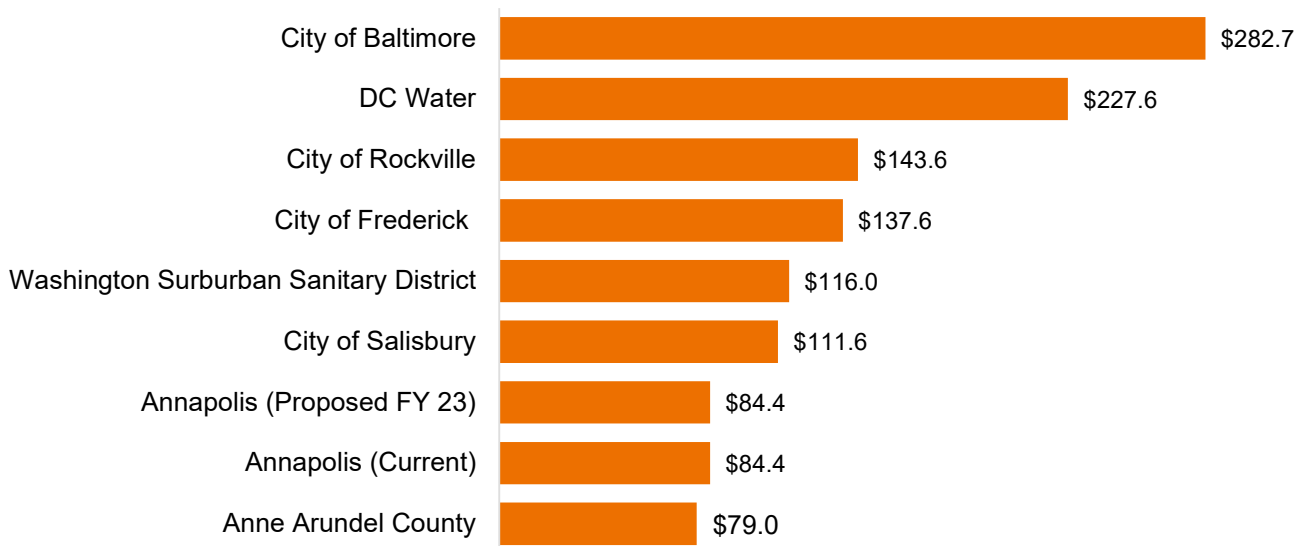
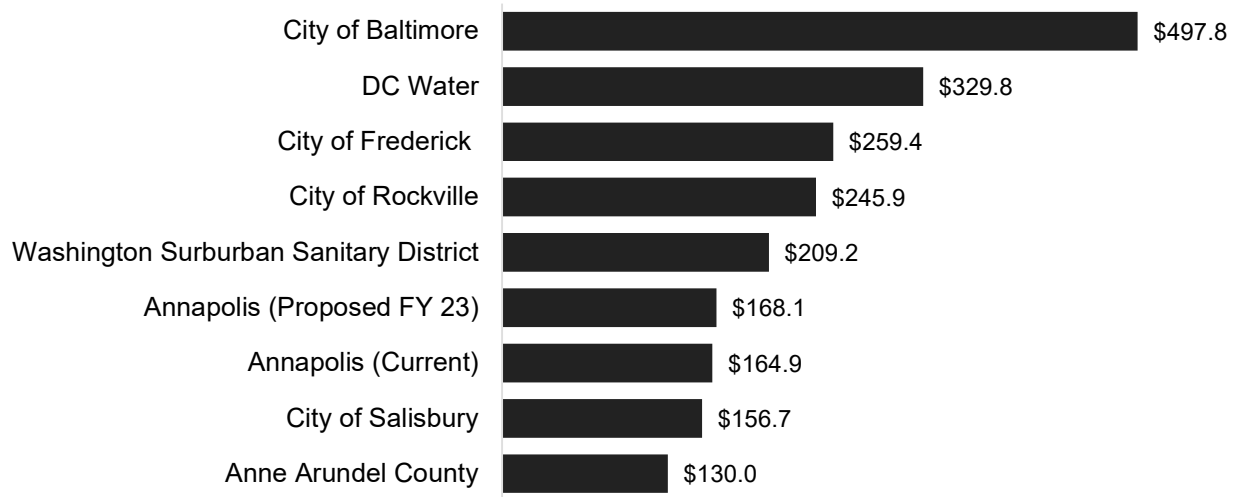


Figure 6-5 Quarterly Combined Water and Sewer Bill Comparison (1" Meter, 12,000 gallons per quarter)



As shown in the previous figures, the water and sewer bills for a typical residential customer within the City of Annapolis will remain among the lowest in the region, even with the proposed adjustments to water rates in FY 23.

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